

 <p>Pollution Prevention Case Study</p>	<p align="center">The Shutterry Of Nanik</p> <p align="center">Conversion from solvent to waterborne coatings for wood finishing</p>		
Standard Industrial Classification (SIC)	Interior Wood Shutter Fabrication/2591		
Type of Waste	Solvent-based coatings		
Strategy	Material substitution		
Company Background	The Shutterry of Nanik is a leading producer of handcrafted, custom interior wood shutters located in Wausau, Wisconsin. The company has been in operation for over 10 years and now employs 65 associates.		
Original Process	The finishing department operates two shifts per day and consists of: four manual paint booths; one drying oven; and several hand sanding stations. The original coating process consisted of sanding, priming, sanding, and top coating the wood components with solvent-based coatings.		
Motivation	The Shutterry's primary motivation for switching from solvent to water-based coatings was to improve the work environment for spray painters and nearby workers in the finishing department. The company was also motivated to reduce regulatory burden, eliminate the need for a flammable material storage structure, increase ease of transportation for waterborne coatings, reduce administrative overhead, and produce a higher quality finish.		
Pollution Prevention Process	The finishing and sanding departments were the only areas affected by the conversion from solvent to waterborne coatings. The new coating process is slightly different than the original process. First the wood components are fogged with a primer and sanded twice, then finally top-coated with waterborne coatings.		
Stage of Development	The waterborne coatings are in full production use for all standard coatings with the exception of the specialized high performance coatings.		
Level of Commercialization	The waterborne coatings are commercially available, but the Shutterry's coatings have been modified slightly to meet specific coating performance criteria.		
Material/Energy Balance	As a result of this successful conversion, the air emissions for this operation changed from a permitted air source to an exempt air pollution source. In addition, the operations hazardous waste generation status was minimized from a large quantity generator (LQG) to a very small quantity generator (VSQG). This eliminates the need to complete a Hazardous Waste Annual Report.		
	Material Category	1992 Qty. Before	1st 1/2 1995 Qty. After

	<table><tr><td>Feedstock Use: (#voc/gal)</td><td>5.89</td><td>2.4</td></tr><tr><td>Water Use: (gal/mth)</td><td>N/A</td><td>< 1,000</td></tr><tr><td>Energy Use:</td><td>N/A</td><td>N/A</td></tr><tr><td>Monthly VOC Emissions: (tons)</td><td>5.97</td><td>0.49</td></tr><tr><td>Coating Thruput: (gal/mth)</td><td>2,026</td><td>408</td></tr></table>	Feedstock Use: (#voc/gal)	5.89	2.4	Water Use: (gal/mth)	N/A	< 1,000	Energy Use:	N/A	N/A	Monthly VOC Emissions: (tons)	5.97	0.49	Coating Thruput: (gal/mth)	2,026	408
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<i>Economics</i>	<p>Capital Costs Custom-made shutter drying oven.....\$70,000 Miscellaneous parts:</p> <ul style="list-style-type: none">• Barrel valves• Fluid regulators• New spray gun tips• Rebuilt paint pumps.....\$ 2,000 <p style="text-align: right;">Total \$72,000</p> <p>Operation/Maintenance Costs Operational costs increased due to the additional fifteen minutes it takes to clean at the end of each shift. Special care is taken so the waterborne coatings will not dry on the tips of the spray guns, fluid reservoirs, or settle out in the fluid delivery system. The remaining operational and maintenance costs have remained the same.</p> <p>Payback Period A payback of 8½ years is calculated based on savings of \$32,600 for the first year from reduced or eliminated safety/DNR compliance programs and \$13,310/year for reduced administrative work in the future.</p>															
<i>Benefits</i>	The waterborne coatings have proven to be more scratch- resistant and cover twice as much area per gallon of coating.															
<i>Obstacles</i>	Two major obstacles were encountered in the conversion from solvent to waterborne coatings: grain raising and atmosphere sensitive coatings. These problems are managed by training paint technicians to identify the exact problem and react appropriately.															
<i>Technology Transfer</i>	Other wood finishers could switch to waterborne coatings if their finishing process can allow for sanding in between the initial and second coat of primer. However, the wood substrate must have structural integrity to avoid distortion, especially for thin wood profiles.															
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<i>Contact Person</i>	Terry Kopplin, Mechanical / Pollution Control Engineer 715/843-6442															
<i>Pollution Prevention Resources</i>	Free, On-site Technical Assistance University of Wisconsin Extension															

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Pollution Prevention Information Clearinghouse
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